

Shared Hosted Data Center Phase II & III Agencies & Operations PIJ Amendment / Change Request

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Business Problem

- State Data Center (SDC) Aging Facility not Sustainable.
- There are more than 140 State entities that leverage the SDC's infrastructure, services, and capabilities for mission-critical services.
- The current facility is considered one of two major points of entrance and exit of IT services into the State owned fiber/copper networks.
- Abandonment of State owned Fiber will result in extensive carrier cost for service delivery to each facility.
- Over 35 facilities and 11,000 users are on the Capitol Mall, including the Governor's Tower.

Requirement

- *Shared Hosted Data Center(HDC) must:*
 - Be minimum a Tier 3 as defined by Telecommunications Industry Association(TIA)-942: Data Center Standards.
 - Large enough for expansion of State agencies footprint
 - Have both white (raised floor) space and Modular space
 - Meet all state & federal security requirements
- *Technology solution must:*
 - Provide redundancy by design
 - Allow leveraging and extending of State owned Fiber
 - Allow multi agency service hand off via equipment specifications

Recommended Solution

- Lease space at I/O Data Center
- Lease 4 strands of Commercial Fiber
- Fiber Splicing at the Capitol Mall
- Acquire and Deploy Dense Wavelength Division Multiplexing (DWDM) to connect Capitol Mall to I/O via leased Fiber
- Acquire and Deploy Data Center switching Infrastructure

Benefits

Service Enhancement

- Leverage a Tier III Datacenter physical security and environment

Problem Avoidance

- Reduce major IT system outage due to environmental issues, i.e. electrical or building cooling systems

Risk Avoidance

- Moving a critical system out of an aging building

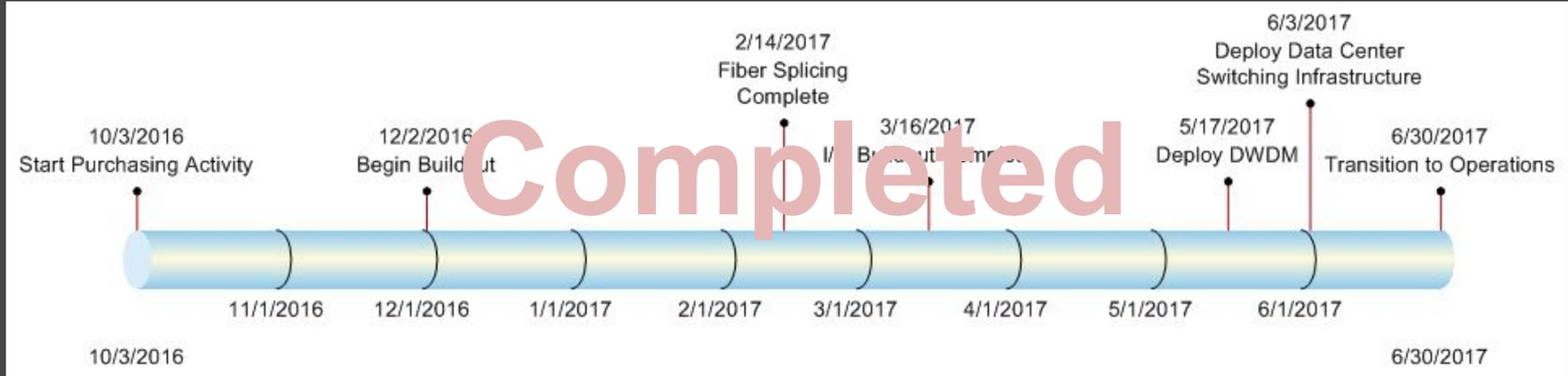
Cost Avoidance/Reduction

- No additional carrier charge by leveraging the DWDM
- Disconnect agencies dedicated carrier connection from the Capitol Mall to I/O and leverage DWDM

PIJ Amendment/Change Request

- Original PIJ AD16015 contained approval for funding to proceed with subsequent phases of a multi-phased approach to ensure removal of all infrastructure currently within the State Data Center by 12/30/2018.
- Original budget request did not include activities that need to be performed in Phase 3 of this project, which was the intent of the original PIJ submission.
- The \$4.6 million request on this Change Request was previously planned to be submitted as a separate request, after progressively elaborating the project and identifying the requirements.
- Phase 3, which is scheduled to begin in FY19, focuses on moving additional Enterprise services (i.e., HRIS), with all of their varied technical complexities.

Phase 1 TimeLine



- ✓ An alternate main distribution frame (MDF) has been identified to replace the State Data Center as a new **HUB for State Fiber** (main distribution Frame(MDF)).
- ✓ Installation of conduit and Fiber Splicing for 1116 strand of Fiber into the new MDF need to be completed
- ✓ Identify, validate required space and execute the task order through State Data Center contract at I/O Data Center (referred to as Shared Hosted Data Center (HDC)).
- ✓ Secure 2@ 2 pair of Dark Fiber from commercial carriers to extend state Fiber to a remote Data Center.
- ✓ Acquire managed Dense Wavelength Division Multiplexing (DWDM) equipment to channelize the lease fiber to **match current capacity of the state owned Fiber**
- ✓ Purchase, Configure and install Data Center switching.
- ✓ Purchase, install 1st row of Data Center Rack with required connection to start the migration of servers

ROI on DWDM

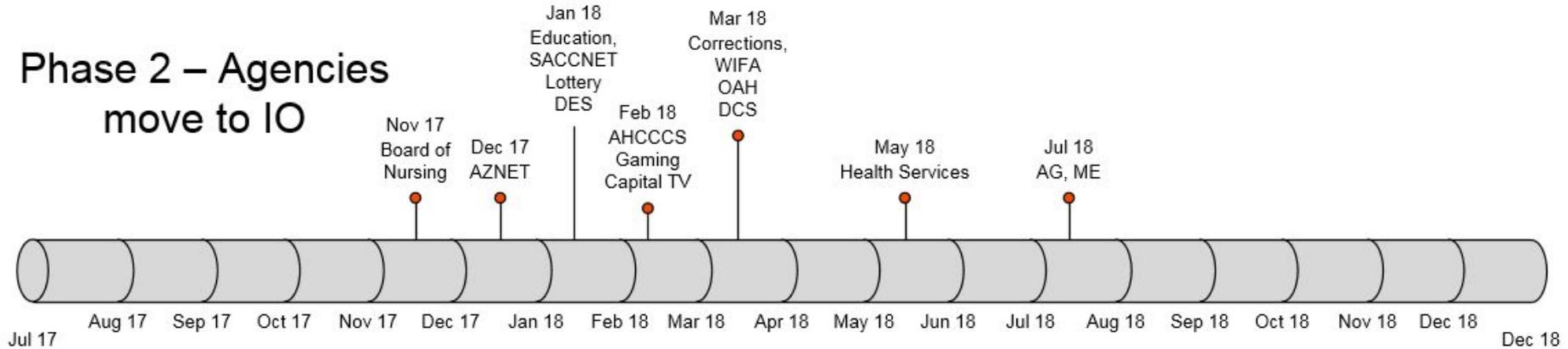
The following table illustrates the ROI for implementing the proposed DWDM network infrastructure vs. implementing point-to-point network connections.

Implementation with out DWDM Equipment	Carrier Wavelen gth QTY Impleme nted	Carrier Wavelength Total	Carrier Wavelength Cost Annually	Implementation with DWDM Equipment	Cumulative ROI
Year 1	23	23	\$828,000	\$2,956,255	(\$2,128,255)
Year 2	24	47	\$1,692,000	\$2,128,255	(\$436,255)
Year 3	24	71	\$2,556,000	\$436,255	\$2,119,745
Year 4	9	80	\$2,880,000		\$4,999,745
Year 5	0	80	\$2,880,000	\$0	\$7,879,745
Total 5 Years			\$10,836,000		

Annual Cost Avoidance on 80 Gig of connection after YR 4= \$2,880,000

Phase 2 Timeline: \$3.4

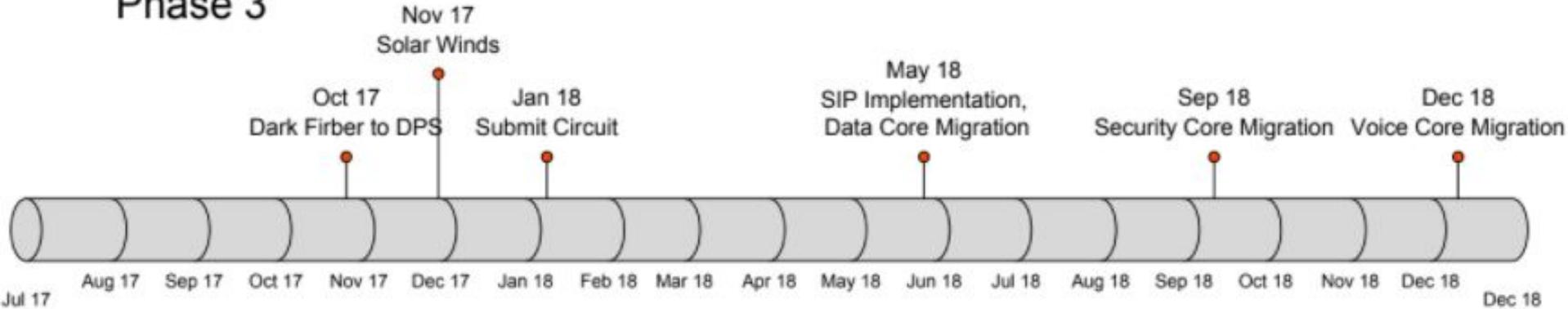
Phase 2 – Agencies move to IO



Agencies begin moving to IO: Start migration

Phase 3 Data Security & Voice: Pending Approval

Phase 3



- AZNet activities on CORE Infrastructure Migration for the State backbone

FY19 Budget

Ongoing Expenditure (Operational Cost)

	FY19 Updated
- DWDM Annual Maintenance	\$ 48,000.00
- 1 Flat Rate Business Line (1FB) - Mall Emergency/Elevator Connections Site	\$ 10,000.00

One Time Expenditure (Development Cost)

Required to complete the core relocation

- Virtual Gateways (VG350) Convert Analog Services on the Mall	\$ 300,000.00
- Power/Infrastructure Upgrades - Capitol Mall to Support Virtual Gateways	\$ 75,000.00
- Carrier Construction - Install 1FB at Each Site/ Back Ups	\$ 100,000.00
- SIP Equipment & Licenses - Voice Core Services	\$ 300,000.00
- Carrier Host Relocation - New Mall Ingress Site	\$ 335,000.00
- Rack and Power for Rows 3 & 4 - IO Data Center Build/Expansion	\$ 135,000.00
- Complete Top of Rack Switching	\$ 500,000.00
- Mall Fiber Splicing for Analog Services	\$ 100,000.00
- Relocation of Current Equipment (Servers)	\$ 400,000.00
- Core Equipment at IO Data Center and ADOA Security and Voice	\$ 1,600,000.00
- Labor and Install	\$ 500,000.00

Building Additional Capacity

- IO Data Center Capacity Build Out	<u>\$ 294,000.00</u>
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TOTAL FY19 BUDGET

\$ 4,697,000.00

QUESTIONS